

Vacuum / Pressure Pumps Types: VCP 130, VCP 80

INSTRUCTION MANUAL

Original - Instruction Manual



VCP 130

VCP 80

European Catalogue Numbers

VCP 130 - ECN: 181-0308 incl. CEE Euro, UK, CH plug leads VCP 80 - ECN: 181-0309 incl. CEE Euro, UK, CH plug leads

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CE

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United States of America

Introduction

Thank you for choosing a VWR Vacuum/Pressure Pumps VCP 130 / VCP 80.

It will take you very little time to get your new Vacuum/Pressure Pumps installed and running. This Instruction Manual is designed to guide you quickly through the process.

We recommend that you read it thoroughly before you begin.

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Warning

PLEASE READ BEFORE OPERATION!

While reading your manual, please pay close attention to areas labeled: **WARNING AND CAUTION** The description of each is found below.

WARNING! Warnings are given where failure to observe instruction could result in injury or death to people.

CAUTION! Cautions are found where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

Intended Use

The layout of the **Vacuum/Pressure Pumps VCP 130 / VCP 80** must be appropriate for the conditions of use. The user bears the sole responsibility for this.

The Vacuum/Pressure Pumps may only be operated under the conditions stated in the "Technical Data" chapter, on the type plate and in the technical specification for the order concerned.

Use for an Unauthorized Purpose

It is forbidden to use the pump for applications deviating from the technical data stated on the type plate or the conditions stated in the supply contract, or to operate it with missing or defective protective devices.

Symbols and conventions

These units conform to the SI International system of units of measurement.

The following symbols (with recommendation of IEC1010) of warning will be found on the pump and in this manual.



This symbol alerts you to a wide range of potential dangers.



This symbol advises danger from electricity or electric shock.



This symbol indicates that a hot surface may be present.



This symbol marks information that is particularly important.

Read all instructions pertaining to safety, set-up, operation, and maintenance. Proper operation is the user's responsibility.

WARNING! Motor includes a self resetting thermal cutout and the pump could restart without actuation under fault condition.

Safety Information

1.10 Warning: To Prevent Injury

- Never operate this product if it has a damaged cord or plug. If it is not working properly, has been dropped, damaged or has fallen into water, please consult manufacturing firm.
- Keep the cord away from heated surfaces. All electrical products generate heat. To avoid serious burns never touch unit during or immediately after operation.
- Never block any air openings or place it on a soft surface where the openings may be blocked. The air openings are for ventilation of the motor inside the housing. Keep all air openings free of lint, dirt and other foreign objects.
- Never drop or insert fingers or any other object into any openings.
- Do not operate this product where oxygen is being administered.
- These pumps are thermally protected and can automatically restart when the protector resets. Always disconnect power source before servicing.
- Wear safety glasses and goggles when operating this product. Never point any air nozzle or air sprayer toward another person or any part of the body.
- Use only in well ventilated areas. The motor on all pumps are totally enclosed fan cooled.
- Do not use any tools or attachments without first determining maximum air pressure for that tool or attachment. Be sure to properly identify intake and discharge before using pump, see chapter 2.50.

1.20 Caution: To Reduce Risk of Electrical Shock

- Do not disassemble. Disassembly or attempted repairs if accomplished incorrectly can create electrical shock hazard. Refer servicing to qualified service agencies only
- Unit is supplied with a three pronged plug. Be sure to connect pump to a properly grounded outlet only.

1.30 Warning: To Reduce Risk of Electrocution

- Do not use this product in or near area where it can fall or be pulled into water or other liquids.
- Do not reach for this product if it has fallen into liquid. Unplug immediately.
- Never operate this product outdoors in the rain or in a wet area.

1.40 Warning: To Reduce Risk of Explosion or Fire

- Do not use this pump in or near explosive atmospheres or where aerosol (spray) products are being used.
- Do not pump anything other than atmospheric air.
- Do not pump combustible liquids or vapors with this product or use in or near an area where flammable or explosive liquids or vapour may exit.
- Do not use this product near flames.



WARNING! Failure to observe the above safety precautions could result in Severe bodily injury, including death in some cases.

The Vacuum/Pressure Pumps VCP 130 / VCP 80 conforms to the:

2006 / 95 / EC	Low Voltage Directive
2006 / 42 / EC	Machinery Directive
2004 / 108 / EC	Electromagnetic Compatibility Directive

The CE sign is located on the rating plate.

Observe the binding national and local regulations when fitting the system into installations.

Product Standards, Safety Regulations

The Vacuum/Pressure Pumps meet the following product standards:

DIN EN ISO 12100-1-2004	Safety of machinery - Basic concepts, general principles for design -		
BIN EN 130 12100-1.2004	Part 1: Basic terminology, methodology		
DIN EN ISO 12100-2-2004	Safety of machinery - Basic concepts, general principles for design -		
BIN EN 130 12100-2.2004	Part 2: Technical principles		
DIN EN ISO 12857-2008-06	Safety of machinery -		
DIN EN 130 13837.2008-00	Safety distances to prevent hazard zones being reached by upper and lower limbs		
DIN EN 1012-2	Compressors and vacuum pumps - Safety requirements -		
DIN EN 1012-2	Part 2: Vacuum pumps		
DIN EN ISO 2151	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method		
BIN EN 130 2131	(grade 2)		
DIN EN 60204-1	Safety of machinery - Electrical equipment of machines -		
DIN EN 80204-1	Part 1: General requirements		
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) -		
DIN EN 01000-0-2	Part 6-2: Generic standards - Immunity for industrial environments		
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) -		
BIN EN 01000-0-4	Part 6-4: Generic standards - Emission standard for industrial environments		
DIN EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use -		
DIN EN 01010-1	Part 1: General requirements		
DIN EN 50110-1	Operation of electrical installations		
Directive 2002/96/EC	Electrical and electronics - old devices (WEEE)		
Directive 2002/95/EC	Dangerous materials in electrical and electronics devices (RoHS)		
China - RoHS	Environment protection law - China 2007-03		

The following additional safety regulations apply in the FR Germany:

BGV A3	Electrical equipment and operating materials
VBG 5	Power-driven machines
BGR 120	Guidelines for laboratories
BGI 798	Hazard assessment in the laboratory
BGG 919 (VBG 16)	Accident prevention regulations for "compressors"
BGR 189 (BGR 195;192;197)	Use of protective working clothes

Observe the standards and regulations applying in your country when you use the pumps.

Package Contents

No.	VCP 130	VCP 80	Quantity
1	VCP 130 Vacuum/Pressure Pump	VCP 80 Vacuum/Pressure Pump	1
2	CEE Euro Plug	CEE Euro Plug	1
3	UK Plug	UK Plug	1
4	CH Plug	CH Plug	1

Installation

2.10 Introduction

This manual has been compiled not only for the care and maintenance of the Vacuum/Pressure Pump now in your possession, but as a helpful reference and guide to prevent/address operating problems.

2.20 Unpacking

Carefully remove the Vacuum/Pressure Pump from the shipping case. Preserve all paperwork for future reference. If damage has occurred from shipment, a claim must be filed with the carrier immediately; preserve the shipping carton for inspection by the carrier. If you are required to communicate with your dealer or manufacturing firm be sure to include your order numbers for quick identification.

Do not return the pump to the factory without obtaining returned goods authorization.

2.30 Pump Mounting

Rubber feet are attached to the pump casing. Rubber feet are excellent for applications involving a semi-flexible surface such as a bench top; they help to isolate noise and eliminate creeping. All Vacuum/Pressure Pumps should be mounted on a horizontal plane.

2.40 Pump Location

The Vacuum/Pressure Pumps should be located preferably in a clean, dry and well ventilated area. Please be sure not to block the ventilation holes located on the motor housing. The pump should be placed where the surrounding temperature remains between 10° and 40° (50° and 104°). Always check to insure the location cho sen is protected from direct or indirect moisture contact. We recommend that the pump be installed at the highest point within the system to prevent possible water condensate from entering the pump. The pump should be located as closely to its system in order to utilize it most efficiently.



WARNING! The motor is thermally protected and will automatically restart unexpectedly when the overload device resets. Don't pump flammable or explosive gases or vapors or operate this pump in an atmosphere containing flammable or explosive gases or vapors.

2.50 Intake and Discharge Provisions

The two regulators and two gauges make it easy to meet your vacuum and pressure requirements. The vacuum regulator and vacuum dial gauge is attached to the intake port. The vacuum regulator allows the vacuum level to be set between roughly atmospheric pressure and the maximum vacuum allowed for the pump model. A moisture trap keeps water from accidentally being drawn into the unit. The pressure regulator and pressure dial gauges are attached to the discharge port. The pressure regulator allows discharge pressure to be set between atmospheric and the maximum possible for the pump model. Discharge air is filtered and noise is muffled with a filter.

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Properly identify the intake and exhaust of the pump.



2.60 Electrical Power

2.61 Power Source Review

Review the power source and the motor rating to be sure they agree in voltage, phase and frequency. Serious damage may occur to the motor if it is connected to an improper voltage. These pumps must be grounded. Grounding reduces the risk of electric shock in the event of an electrical short circuit. The plug must be plugged into an outlet properly grounded. Consult your local electrical codes if you have doubts.

2.62 Overload Protection

Motor thermal overload protection is made available by the motor manufacturer as an aid to minimize motor failure. Overload protection is a standard feature on 50 / 60 Hz single-phase-motors. The motors have automatic overload protection. Automatic reset protection is designed to reset itself after a predetermined cooling period. If the fault to the drive remains unaltered, the motor will cycle on and off until the fault is corrected.

2.70 Vacuum Connections

All Vacuum/Pressure Pumps come with intake and discharge hose barbs which accept 8 mm I.D. rubber pressure/vacuum hose. Hose clamps should be used to hold the hose in place. Since these models operate in the viscous flow regime, the small diameter of the hose will generate minimal conductance loss. For best results, we recommend the length of the tubing between the pump and the chamber be kept as small as possible.

2.80 Vacuum and Pressure Gauges

These Vacuum/Pressure Pumps come with dial gauges mounted on the regulator assemblies. The vacuum gauge gives negative pressure - that is pressure below atmospheric. The reference point for the vacuum gauge is atmospheric pressure. The pressure gauge gives pressure above atmospheric. The reference point for the pressure gauge is atmospheric pressure. Please keep in mind that atmospheric pressure tends to vary from day to day. As a result of this variability, the dial vacuum gauge will indicate slightly different maximum vacuum readings from day to day.

2.90 Traps

2.91 The need for a Trap

The pumps will handle humid air. All wetted parts are treated for corrosion protection from moisture and the valves are stainless steel. A plastic trap with a ball check valve is attached to the regulator assembly to prevent water condensate from accidentally being ingested into the pump. If there is a chance liquid may be drawn from the process under evacuation, we recommend a liquid trap be placed between the process and the pump. A simple liquid trap is a filtering flask. See figure below.



When a heavy load of water vapor is evolved from the vacuum process, a cold trap is recommended to help prevent damage to the pump mechanism. The cold trap, immersed in a suitable Dewar flask, is installed so that the water vapors may come in contact with the surfaces of the trap and condense. Commonly used refrigerants are liquid nitrogen or dry ice and acetone or alcohol. Dry ice provides sufficient cooling to freeze out most heavy water vapor loads. A variety of cold traps are available from VWR.



WARNING! The pump is not recommended for pumping acid, base or organic vapors or gases. Serious damage to the pump will shorten the pump's service life. In addition, pumping flammable vapors or gases can lead to serious safety hazard leading to fire or explosion.

2.92 The Care of a Trap

When using a cold trap the refrigerant should be maintained at a high level in the flask to keep the trap at a uniformly low temperature. If the trap is rewarded it may allow re-evaporation of the condensate. The refrigerants add tube on the liquid nitrogen trap should not be obstructed as the refrigerant boil-off can produce dangerously high pressures. If the trap becomes saturated it should be disconnected from the system, drained and cleaned. An increase in pressure in the vacuum system will normally indicate that the trap has become saturated. To clean the trap, remove the trap from the system and allow the trap to warm up and rinse off the condensate with a suitable solvent in a fume hood. Thoroughly clean and dry the trap before reinstalling into the system.

Starting Procedures

3.11 Starting a VCP 130 / VCP 80 Vacuum/Pressure Pump

Before attaching the pump to a system, familiarize yourself with the function and action of the pressure vacuum pump that you have acquired. Review the power requirements as described *in chapter 2.60*. We recommend running the pump for a few minutes to warm it up, before use. The warm-up improves the pumps ability to handle humid air.

3.12 Cleanliness

Take every precaution to prevent foreign particulates from entering the pump. Particulates will damage the pump's performance. If you find that particulates come off during evacuation, a particulate trap in the fore line will work. A simple, inexpensive trap may be made by placing glass wool in a glass or plastic tube. Screens must be inserted to hold the glass wool in place.

3.20 Leak Detection

The importance of eliminating all leaks in a vacuum system is obvious. The pump must remove this added volume of leaked gas to maintain the desired vacuum. Leaks for these pump can be located by slightly pressuring the system and painting the suspected area with a thick soap solution. Escaping air will produce soap bubbles.

3.30 Pressure Range

Vacuum/Pressure Pumps are designed to be run from slightly below atmospheric to their maximum vacuum level on the intake side. The pump also may be run from atmospheric to their maximum rated pressure rating. Consult the Specification Table (See Chapter Specifications) for the ratings for your specific model.

3.40 Shutdown Procedures

After use, we recommend the pump be run for about 2 minutes disconnected from the vacuum process. The air pumped through the mechanism will purge out water vapor or droplets of water condensate that may have formed on the inside of the pump. This purge of the pump mechanism helps prevent corrosion.

Specification

Parameter	Unit	VCP 130	VCP 80
Pumping speed 50 Hz	m ³ /hr (l/min)	1.1 (18)	2.3 (38)
Over Pressure	bar	6.9	6.9
Ultimate pressure	mbar (Torr)	133 (100)	80 (60)
IN / EX Hose connector	mm	DN 8	DN 8
Weight	kg	6.3	5.3
Dimensions (W/D/H)	mm	224 / 206 / 254	191 / 254 / 229
Motor Voltage	V	230	230
Motor Frequency	Hz	50	50
Motor Power	W	93	190
Order No.	ECN	181-0308	181-0309

Dimensional Drawing VCP 130



Dimensional Drawing VCP 80



Maintenance

4.10 General Maintenance

These Pressure Vacuum units are 100% oil-free. The pump employs a non-lube piston and cylinder. No maintenance is necessary for the bearings. All bearings are sealed and permanently lubricated. Lubrication should not be attempted. The units are built for continuous duty operation with the quietness and durability of a diaphragm, but with piston performance.

4.11 Storage

The pumps are to be stored in a low-dust, interior room within the temperature range from + 5 to + 40 \degree and at a relative air humidity < 90%.

Leave the protective elements on the suction and pressure ports. Another equally good protection may be used.

4.20 Service Kit – VCP 130

Order No. 181-0312

Service Kit (exploded view complete)		Part	Quantity
	1	Connecting Rod Ass'y	1
	2	Handle Srcew	2
, °∠² °°o, (() ~ °	3	Head Screw	4
	4	Gasket Seal	1
	5	Valve plate Ass'y	1
	6	O-ring, Cylinder	1
	7A	Jar - Plastic	1
	7B	Jar - Plastic	1
	8	Filter Element	1
7.4	9	Pressure Gauge	-
	10	Ball	1
6	11	Vacuum Gauge	-
	12	Gasket	2
	13	Rubber Suction Feet	-
	14	Pressure Regulator Ass'y	-
	15	Vacuum Regulator Ass'y	-
	16	Replacement Filters	3
	17	O-ring, Cylinder	1
12			
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4.21 Service Kit - VCP 80

Order No. 181-0313

Service Kit (exploded view complete)		Part	Quantity
9 \		Connecting Rod Ass'y	1
	2	Rubber Suction Feet	4
	3	Head Screw	4
	4	Gasket Seal	1
	5	Valve plate Ass'y	1
	6	O-ring, Cylinder	1
	7	Vacuum Gauge Ass'y	-
	8	Pressure Gauge Ass'y	-
	9	Pressure Gauge	-
	10	Vacuum Gauge	-
	11	Valve Flapper Screw	2
11/12	12	Valve Keeper	2
	13	Valve Flapper	2
5	14	Piston Cup	1
	15	Cylinder sleeve	1
	2		

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Cause	Solution	
Vacuum Pump does not start	No power supply	Electrical system to be checked by a qualified electrician.	
	Motor defective	Exchange by service shop.	
	Pump body defective	Exchange or repair by service shop.	
Vacuum Pump does not generate a vacuum or only an inadeguate one	Connected apparatus leaks, connecting elements leak	Identify and seal the leak, replace the seals and hoses if necessary.	
an inadequate one	Vacuum Pump leaks	Check the hose connections between the pump heads, replace the hoses and fittings if necessary.	
	Pump head leaks	Repair by service shop.	
	Pistons defective	Repair by the service workshop or the user.	
	Valves defective or debris in valves	Replace valves Repair by the service workshop or the user.	
	Valves are dirty	Clean condensates and foreign objects out of the valves. Cleaning by the service workshop or the user.	
	Vacuum Pump is dirty	Cleaning by the service workshop or the user.	

Technical service

Web Resources

Visit the VWR's website at **www.vwr.com** for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit. **www.vwr.com**

Warranty

WWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of purchase. If a defect is present, VWR will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear.

For your protection, items being returned must be insured against possible damage or loss. This warranty shall be limited to the replacement of defective products. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Equipment Disposal (WEEE)



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment. For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you